5.16.08 SHALE OR "SHALELIKE" MATERIALS IN AGGREGATE
(Kansas Test Method KT-8)

a. SCOPE

This test method shall be used to determine the percentage of shale, mudstone, claystone, or other materials which would exhibit the properties of shale upon weathering.

b. REFERENCED DOCUMENTS

b.2. AASHTO M 92; Wire-Cloth Sieves for Testing Purposes

b.3. AASHTO M 231; Balances Used in the Testing of Materials

c. APPARATUS

c.1. The balance shall conform to the requirements of AASHTO M 231 for the class of general purpose balance required for the principal sample mass of the sample being tested.

c.2. Drying pans.

c.3. Oven capable of maintaining a uniform temperature of 110 $\pm$ 5°C (230 $\pm$ 9°F).

c.4. Standard 9.5 mm (3/8 in) sieve conforming to AASHTO M 92.

d. SAMPLE PREPARATION

A sample having a minimum mass of 10,000 g shall be used for this test. The sample shall first be dried to a constant mass at a uniform temperature of 110 $\pm$ 5°C (230 $\pm$ 9°F). After the sample has cooled so that it may be readily handled, it shall be weighed to the nearest 1.0 g and the mass recorded. The sample shall then be screened over a 9.5 mm (3/8 in) sieve and the material passing the 9.5 mm (3/8 in) sieve shall be discarded. The material retained on the 9.5 mm (3/8 in) sieve shall be moistened sufficiently to facilitate identification of the deleterious material. Moistening of the material shall be within the range of lightly spraying to completely immersing for a ten minute period. The amount of moistening shall be that amount which will best assist in identifying the deleterious material but will not result in disintegration and subsequent loss of the material.

e. TEST PROCEDURE

While the sample is still moist, it shall be examined carefully and all pieces of shale or shalelike material shall be removed for weighing. The shale and shalelike material may be identified by any of the following:

e.1. A soapy, slick surface when wet.

e.2. Laminations or bedding planes along which it will split with comparative ease.

NOTE: Mineralized or organic seams can be common in specimens but should not be mistaken for or considered as laminations unless they are coincident with individual laminations or bedding planes.

e.3. Mudstone appearing particles in which very crude and indistinct laminations can be observed but will not easily separate along the laminations.

e.4. Mudstone appearing particles in which no laminations appear but which are composed of finely divided mineral matter of clay grade and composition.

The shale or shalelike material removed from the sample shall be dried to a constant mass at a uniform temperature of 110 $\pm$ 5°C (230 $\pm$ 9°F). After the sample has cooled so that it may be readily handled, it shall be weighed to the nearest 1.0 g and the mass recorded.

f. CALCULATIONS

The percentage of shale shall be computed by the following formula:

$$\text{Percent Shale} = \frac{100(\text{Mass of Dry Shale Retained})}{\text{Original Dry Mass of Test Sample}}$$

NOTE: As an alternative to drying the whole sample, a representative sample of 2,500 g minimum for moisture may be split out of the whole sample. The moist sample is dried to constant mass at a uniform temperature of 110 $\pm$ 5°C (230 $\pm$ 9°F). The percentage of moisture is calculated to two places to the right of the decimal point and is used to correct the mass of the remainder of the sample to dry mass. This dry mass of the remainder of the sample is used as the Original Dry Mass of Test Sample (10,000 g minimum in **d.**).

Example:

Wet mass of moisture sample	= 2,645 g
Dry mass of moisture sample	= 2,557 g
Wet mass of the remainder of sample	= 10,976 g

Percentage of moisture =

$$\frac{100(\text{Wet mass of sample} - \text{Dry mass of sample})}{\text{Dry mass of sample}}$$

$$= \frac{100(2{,}645 - 2{,}557)}{2{,}557} = 3.44\%$$

Dry mass of the remainder of the sample =

$$\frac{100(\text{Wet mass of the remainder of the sample})}{(100 + \text{Percentage of Moisture})}$$

$$= \frac{100(10{,}976)}{100 + 3.44} = \frac{100(10{,}976)}{103.44} = 10{,}611g$$